



Modem Installation Manual

For all Practical Peripherals modems.

A small rectangular logo with the word "Online" in white serif font, enclosed in a thin black border. Below the word "Online" is a small graphic of a computer monitor or a telephone handset.

**Mail product registration to the
following location:**

(See back cover for product registration.)

Practical Peripherals

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1 Introduction

Thank you for purchasing a Practical Peripherals modem for your IBM compatible computer or Macintosh. Whether you've just bought your first modem or you're upgrading to a faster one, this installation manual and its companion *User's Online Reference* are designed to help you with installation, configuration, operation, and troubleshooting. To review the features or technical specifications of your new Practical Peripherals modem, please refer to the *Online User's Reference*.

Your modem package was carefully checked before shipment from the factory. If any item on the following list is missing, please repack the unit and return the entire package to your dealer for exchange:

- Modem
- RJ-11 Connector
- External Modems only: Power Supply
- Modem Installation Manual (includes Product Registration)
- Online User's Reference Diskette
- Communications Software

Note: Refer to the *Online User's Reference* for any additional items that may be included with your particular model.

Using this Manual and Online User's Reference

This manual has been organized to make information easily accessible to users of varying needs and experience levels.

Chapter 1: *Introduction*—provides general information about your modem and describes the use and organization of this manual and the *Online User's Reference*.

Chapter 2: *Installation*—describes the physical installation of the modem and explains modem configuration.

Chapter 3: *Quick Installation and Unique Product Configuration (All Practical Modems)*—provides quick and/or additional installation and configuration instructions for each Practical Peripherals modem.

Appendix A: *FCC and Industry Canada Certification*—contains FCC regulations parts 15 and 68, UL regulations, fax regulations, and

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Industry-Canada notifications and restrictions pertaining to the use of modems.

Appendix B: *Warranty Information*—contains important information regarding your modem warranty and repair.

Online User's Reference

The included online user's reference contains the following:

Basic Modem Operation—explains how to use the features of the modem.

Features and Specifications—contains a list of all the features and technical specifications for each of the Practical Peripherals modems, and any special features your modem may have.

Summary Tables—contains a complete summary of the AT command set, result codes, negotiation messages, S-Registers, and quick reference tables for your modem's special features.

Troubleshooting, and Technical Support—lists, explains, and guides you through some of the more common installation and operating problems. This chapter also provides guidelines for obtaining technical assistance.

Further Information

If you would like further information regarding S-Registers, AT commands, flow control and other advanced topics, a supplemental manual is available on the Practical BBS and on the PRACTICAL PERIPHERALS Forum on CompuServe. The self-extracting ASCII file is called MDM-MAN.EXE. A self-extracting Microsoft Word for Windows file labeled WFW-MAN.EXE, and an uncompressed ASCII text file labeled REFMAN.TXT are also available.

The PRACTICAL PERIPHERALS BBS supports 1200, 2400, 9600, 14400 and 28800 bps connections. The parameters are: 8 data bits, 1 stop bit, and NO parity (8-1-N), with ANSI emulation. The BBS operates 24 hours each day, seven days each week. The telephone number is:

(770) 734-4600

All Practical Peripherals customers are welcome to call and use the PRACTICAL PERIPHERALS BBS.

Typographical Conventions

Throughout this manual, certain typographical conventions have been implemented to illustrate keyboard input and screen display dialog.

- Items to be typed on the keyboard are shown in uppercase **BOLD** characters. For example: Type **THIS**
- Text displayed on the screen is shown in uppercase *ITALIC* characters. For example: Read *THIS*
- Significant concepts and important terms are shown in *lowercase italics*.
- **Enter** represents a left-pointing arrow or the word *Return* or *Enter* on the keycap.

A typical dialog with your modem would be:

AT **Enter**
OK **Enter**

Keyboard entry by the user.
Modem response displayed on screen.

Typing an AT command and pressing **Enter** results in the modem responding with *OK* if the command is valid, or *ERROR* if the command is invalid or if the modem cannot understand the command.

All Practical Peripheral modems have been approved by the Federal Communications Commission (FCC) for direct connection to all U.S. telephone systems except party lines and pay telephones. It has been designed for use with most IBM-compatible or Macintosh personal computers.

2 Installation

The installation of your modem is the essential hardware link between your computer and the telephone network. This chapter covers installation and configuration instructions for all of the Practical Peripherals modems. Quick installation guidelines for all Practical Peripherals modem products are also included for easy reference in *Chapter 3*. For software installation, refer to the documentation for your communications and/or fax software.

Required Equipment

In addition to the contents of your modem package, you will need the following items:

- **Computer**

The computer compatibility requirements are different for each modem class. Refer to the system requirement information for your modem's specific compatibility in *Chapter 3, Unique Product Configuration*.

- **Serial cable**

To comply with FCC rules, you must use a properly-constructed, shielded serial cable to connect an external modem to your computer system. This cable is not supplied with the modem, but is available from most computer supply stores.

To comply with FCC rules, Mac users must use a shielded Hardware Handshake cable. This is provided with your MacClass modem.

- **Telephone Service**

The telephone outlet must have a modular-type connector (RJ-11) jack. This is the type of jack used in most homes and offices with single-line telephone service.

CAUTION: Connecting your modem to a digital telephone outlet could cause damage to your unit. If you are not certain about the type of telephone jack you have, contact your local telephone company for further information.

Communications Software

Please refer to your software user's guide for specific instructions on how to install and run your communications and/or fax software.

Connecting the Modem

Before continuing, check that the power to your computer is **OFF**. Connecting the modem to your computer, and the power supply, varies depending on what type of modem you have. Modem installation is divided into two sections:

- Installing an Internal Modem
- Installing an External Modem.

Installing an Internal Modem

Internal modems are inserted directly into the motherboard of your computer, using the established power supply. There are two different types of internal modems:

- PC Card models for laptop computers
- HC (half card) models for standard computer systems.

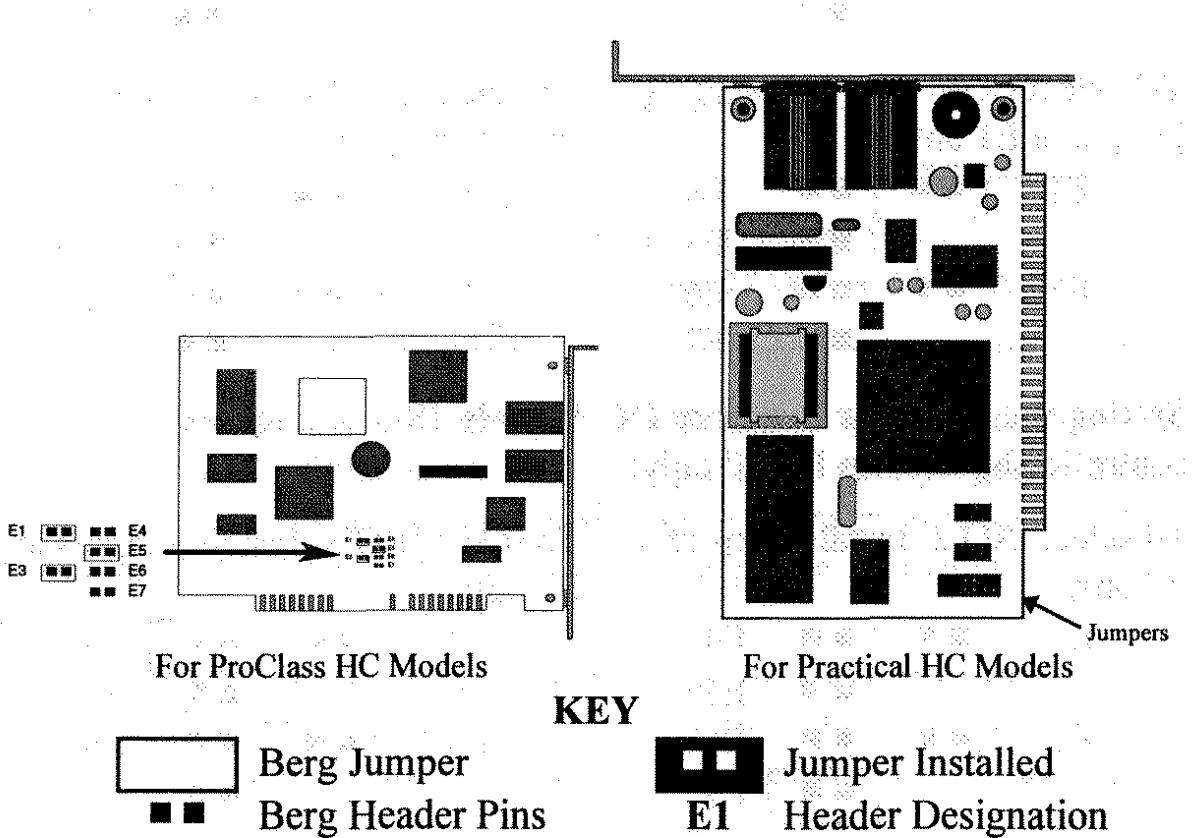
PC Card Internal Modems (Laptop Users)

1. Locate the PCMCIA socket on your computer. (Refer to your computer operation manual for assistance.)
2. On EZ models, press the lower left corner of the modem to extend the EZ-Port, OR on T2 models, plug the LAM into the modems rear connector.
3. With the logo facing up and the 68 pin connector facing the PCMCIA socket, insert the modem into the socket. Push firmly to engage the 68 pins.

To connect your laptop to a phone line and begin transmitting, skip to "Installing the RJ-11 Connector" later in this chapter.

Installing an HC Internal Modem

In order to install an HC internal modem you have to remove the cover from your computer. However, before doing this, switch off your computer and unplug the AC power cord from the wall socket. **This is a very important safety precaution.** Dangerous voltages are present inside the system case whenever the power cord is plugged in, even when the power is switched OFF.



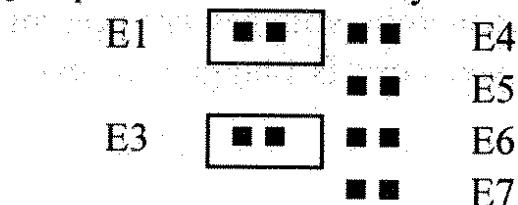
Berg jumpers and Jumper Installation

A *Berg jumper* is a small plastic and metal component used to cover the pins of the *Berg header*. To locate the three Berg jumpers included with your unit, look for the Berg headers as indicated for PC users in the preceding illustration. You select a COM Port or IRQ by covering both pins of a header. If a jumper covers only one pin of a header, this header is in a neutral position.

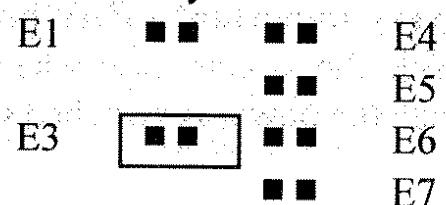
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Setting the COM Ports for ProClass HC Models COM Ports use headers E1 and E3 only.

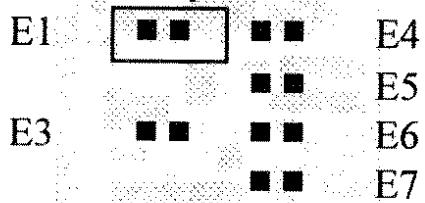
To select COM Port 1: Install jumper at E1 and E3 only.



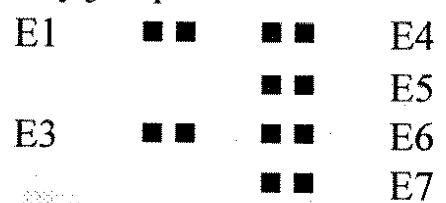
To select COM Port 2: Install jumper at E3 only.



To select COM Port 3: Install jumper at E1 only.

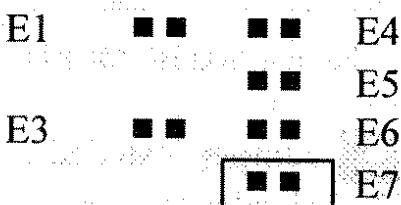


To select COM Port 4: Do not install any jumpers.

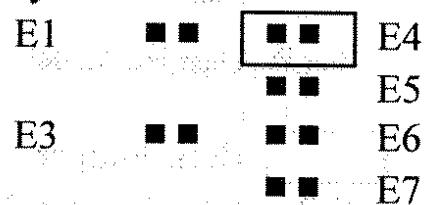


Setting the IRQs for ProClass HC Models IRQ settings are controlled by headers E4-E7 only.

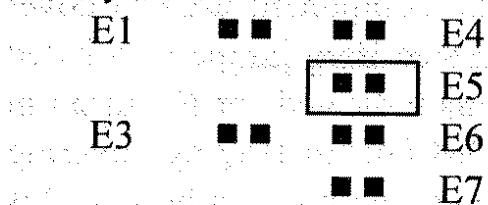
To select IRQ 2: Install jumpers at E7 only.



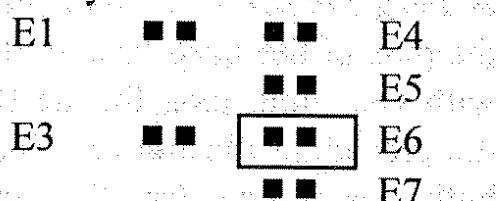
To select IRQ 3: Install jumpers at E4 only.



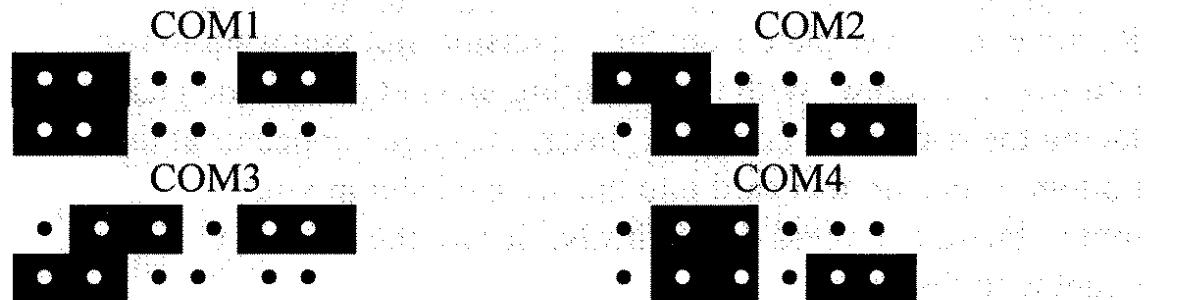
To select IRQ 4: Install jumpers at E5 only.



To select IRQ 5: Install jumper at E6 only.



Setting the COM Ports for Practical HC Models To set the COM ports for Practical Models, set the jumpers as indicated below:



Inserting the Internal Modem Board

CAUTION:

ALWAYS DISCONNECT THE MODEM BOARD FROM THE TELEPHONE SYSTEM WHEN INSTALLING OR WHEN COVERS ARE REMOVED FROM YOUR COMPUTER.

Before proceeding, make sure your computer is unplugged from all power sources. This is a very important safety precaution. Dangerous voltages are present inside the system case whenever the power cord is plugged in, even when the power switch is switched OFF.

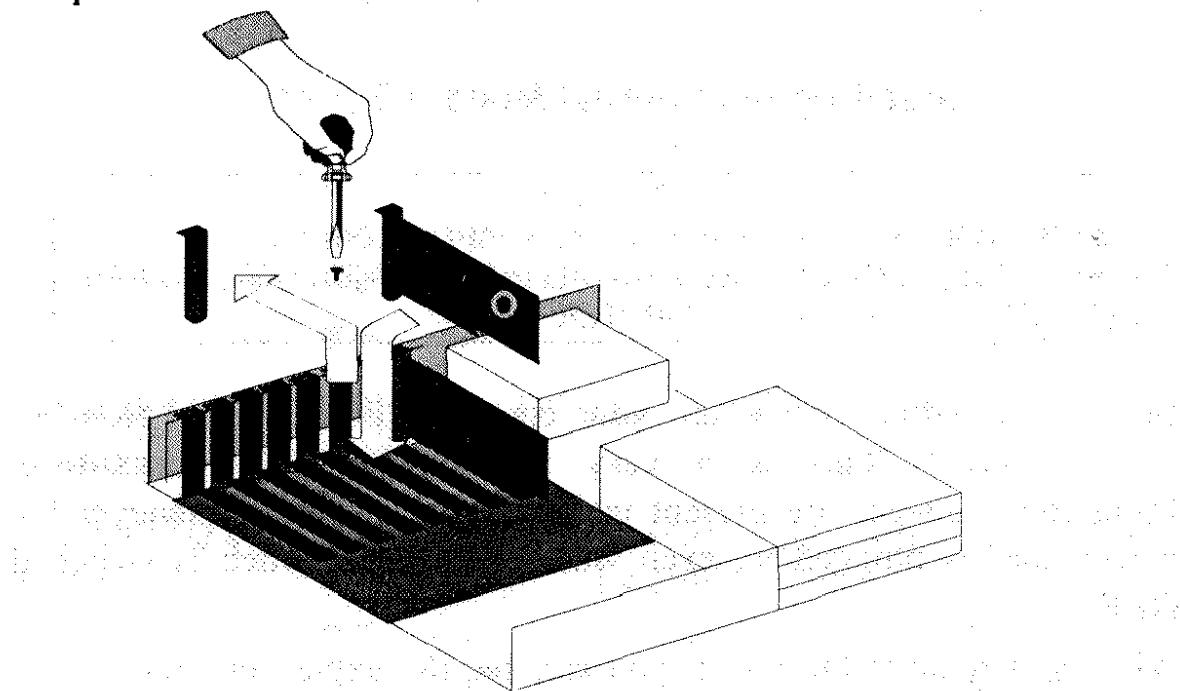
When you remove the cover, you can see the expansion slots in the motherboard. The number and exact location of the unused slots will depend upon your system and the expansion boards already installed.

Note: The installed boards have a metal retainer bracket attached to the rear edge of the computer. This bracket is screwed to the rear panel of the computer casing.

The unused slots have a cover plate attached to the rear panel immediately behind each unused expansion board slot on the motherboard. Most HC modems can be installed in any unused slot in your computer.

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1. Remove the cover from the computer unit according to the directions in your computer's operation manual.
2. Remove the cover plate from the expansion slot you want to use and save the screw. With the mounting bracket and phone jacks facing the rear of the computer, insert the edge connector at the bottom of the modem card into the selected slot in your motherboard and press down firmly. Secure the bracket to the rear panel with the screw.



3. Replace the cover on the system unit by following the instructions in your computer's operation manual.

Now that you've installed your internal modem, you're ready to connect to your phone system and begin communicating. Skip to "Installing the RJ-11 Connector" later in this chapter.

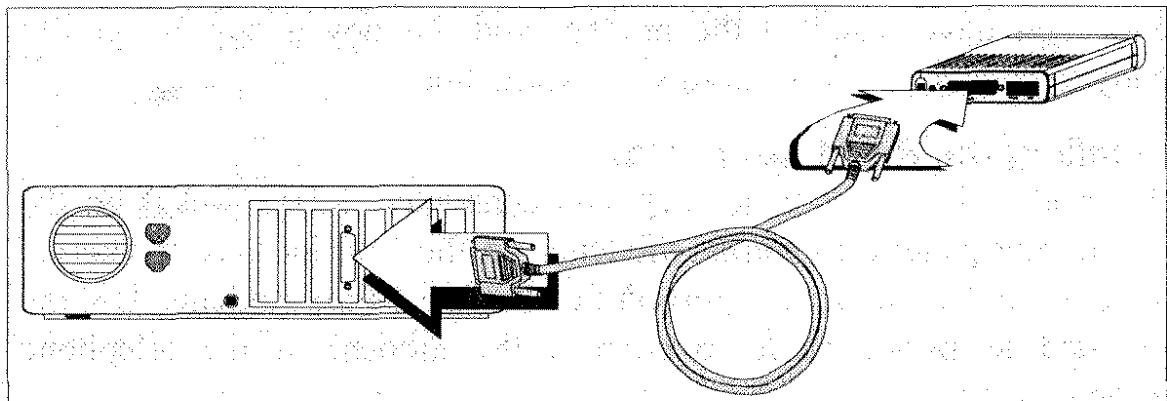
Installing an External Modem

Before continuing make sure the power to both your modem and computer is **OFF**. An external modem is off when all the front-panel indicator lights, including the **MR** (modem ready) light, are not lit. Use these instructions for the following types of modems:

- MiniTower (MT) External Modems
- LCD External Modems.

Connecting the Serial Cable (PC Users)

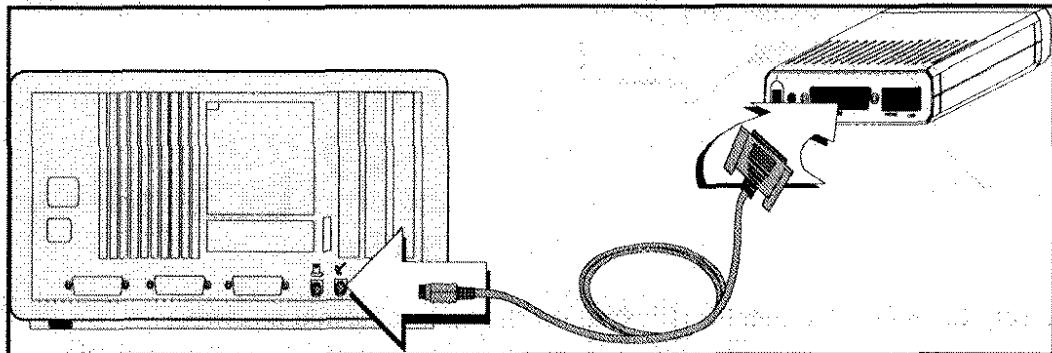
1. Connect the male end of the serial cable to the female connector on the back of the modem.
2. Insert the opposite end of the cable into the RS-232 connector on the rear panel of your computer or terminal.
3. Carefully secure the connector screws, if supplied, at both ends of the cable.



Connecting the Serial Cable

Connecting the Hardware Handshake Cable (Macintosh Users)

1. Connect the male end of the Hardware Handshake Cable to the female connector on the bottom rear panel of the modem.
2. Insert the opposite end of the cable into the modem port connector on the rear panel of your Macintosh.
3. Carefully secure the connector screws, if supplied, at the modem end of the cable.



Connecting the Hardware Handshake Cable

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Connecting the Power Supply

For an external modem, the power supply cord has a transformer on one end and a small plug on the other. The transformer plugs into a standard 120V AC wall socket and the round connector fits into the socket at the rear of the modem.

1. Fit the small power cord plug into the modem.
2. Plug the power supply cord into a standard 120V AC wall socket.

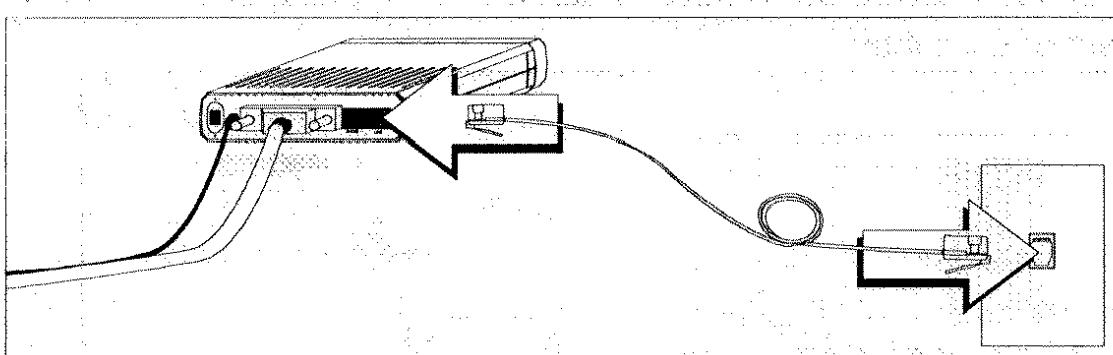
Once you have installed the modem and the power supply, you're ready to connect the modem to your phone line.

Installing the RJ-11 connector

The modem has a modular telephone connector (RJ-11 jacks) on the bottom rear panel for external modems, on the exterior part of internal modems, and a pop out EZ port on PCMCIA EZ-Port modems. Use the provided telephone cable to connect the modem to the telephone service outlet.

1. Insert one end of the cable into the RJ-11 jack of your telephone service outlet.
2. Insert the other end of the cable into the modem's RJ-11 jack, marked line.

Note: If your modem has two RJ-11 jacks, use the second jack, marked phone, to connect a telephone to the modem, if desired. Telephone and cable are not provided for this connection.



Connecting the RJ-11 Connector (Illustration shows an external modem.)

Testing the Modem

To verify that your modem is operating properly, switch on your computer and the modem.

Please install your communications software at this time.

After installation load your communications software and change to terminal mode.

Note: The modem's default configuration is suitable for the most common communications applications. Your communications software controls your modem and these activities. Terminal mode is used to verify that the modem has properly connected to the computer. It is also used to configure specific operating instructions described later in this chapter. Refer to your communications software user's guide for more information.

Testing the computer connection

At the terminal mode prompt, type: **AT**

See the *Online User's Reference* for an explanation and complete list of the **AT** commands.

The modem should respond by displaying *OK*. The *OK* confirms that the modem and the computer are communicating.

If the modem does not respond, check that the COM Port selected in your software and the one your modem is attached to are the same.

Testing the telephone connection

To test your telephone connection, dial your own telephone number to check that the telephone connection is working properly.

If your telephone system uses *tone* dialing, the command line would be:

ATDT 555 1234

(555-1234 = your telephone number)

For *pulse* dialing, the command line would be:

ATDP 555 1234

If an access code is required on your telephone system, enter that code before the telephone number. If 9 were the access code:

ATDT 9, 555 1234

When the modem takes the telephone line off-hook, you should hear the dial tone from the modem's speaker. Since you are calling the telephone number that you are using to make the call, the line will be

Modem Installation Manual

busy. The modem will display the result *BUSY* on your computer monitor, unless you have call waiting enabled.

Should you experience problems in either the installation or operation of your modem, please refer to the online reference included with your modem, for information about the most common installation and operation problems.

Using the Correct Configuration Profile

A *configuration profile* is a set of modem operating parameters. The active set of parameters, called the *active configuration profile* (ACP), resides in the modem's random access memory (RAM) when the modem is **ON**. The modem can store two customized configuration profiles in its nonvolatile memory. The factory default configuration profiles are located in the modem's read-only memory (ROM).

Modem Configuration Guidelines

Because your modem can be configured several different ways, you can tailor the modem's operation to suit the needs of your communications software and telecommunications applications.

The place to start

The factory defaults enable the modem to automatically negotiate a connection with another modem. To set your modem to its factory default, type the following:

AT&F [Enter]

This command line loads the standard Hayes-compatible factory default commands into your modem.

3 Quick Installation and Unique Product Configuration

This chapter explains how to quickly set up your modem to begin sending and receiving files and faxes. It is divided into two sections:

- Internal Modems— includes PC Card and HC (half-card) models.
- External Modems— includes LCD and MiniTower (MT)models.

Each section includes all speeds and classes available, and repeats the "Quick Installation" information found in the *Online User's Reference*. For more detailed installation instructions, please refer to *Chapter 2*.

Also, some models may require special configuration in order to operate with your system and communicate with some lower speed modems. These instructions follow the quick installation guides for each type of modem.

WINDOWS 95 Users: If you are using Windows 95, you must still manually configure some of the internal non Plug-n-Play models, using the jumpers or DIP switches to set up the hardware for installation. Also, if you are using Windows 95, you may need to change the COM port Windows 95 selects automatically for new hardware. For more information, refer to "Using Windows 95 Installation" later in this chapter.

Internal Modems

The Practical Peripherals internal modems include PC Card modems which are Personal Computer Memory Card International Association (PCMCIA) credit card sized modems for laptop users, and HC (half-card) modems which are plug-in modem boards for standard computer systems.

PC Card Internal Modems

PC Card modems are used with IBM compatible and Macintosh computers that have a PCMCIA port. All PC Card modems come with a plastic carrying case and communications and fax software.

PC Card Quick Installation Guide

To install a PC Card modem:

1. Make sure the configuration program is loaded. This should be provided with your laptop and will run automatically when you insert your PC Card, followed by a beep. If you do not hear a beep, you must install PCONFIG.EXE which is included with your modem.
2. For ProClass™ T2 models, plug the LAM into the modem's rear connector, OR
For ProClass and MacClass™ T2-EZ models, depress the lower left corner of the modem to extend the EZ-Port. Plug one end of the RJ-11 phone connector into the port.

WARNING!

The EZ-Port connector is designed for use with standard RJ-11 phone line ONLY. Typically this is the line coming from the wall into the rear of the phone. DO NOT INSERT THE HANDSET PHONE LINE INTO THE EZ-PORT. This may damage your modem.

3. Locate the PCMCIA socket on your computer. (Refer to your computer's operation manual for assistance and possible installation considerations.)
4. Insert the RJ-11 phone connector into your analog telephone service outlet.

Note: To make sure your modem is functioning properly, follow the testing procedures in Chapter 2 of this manual.

Quick Installation and Unique Product Configuration

PC Card Configuration Options

Following are the standard software configuration options for your PC Card modem when used with most communications packages:

Type of Computer	Modem Speed	bits/s	Flow Control	Terminal Emulation	Initialization String
Macintosh	144	115,200*	Hardware	ANSI	AT&F3
	288	115,200*			
PC	144	115,200*	RTS/CTS or Hardware	ANSI	AT&F1
	288	230,400*			

***Note:** See the technical specifications for your model for more information about bits/s and software capabilities.

PC Card System Requirements: IBM PC or compatible with PCMCIA 2.0 or 2.1 Type II, III or Toshiba 16mm PCMCIA compliant slot. (Quick Link II requires 640K RAM and hard drive). Macintosh with PCMCIA Expansion Module, System 7.5 or greater and 2 MB of memory.

HC (half-card) Internal Modems

HC internal modems are inserted directly into the mother board of your computer through an expansion slot. Your package also contains communications software and a user's guide. To install an HC modem, you must first set the COM Port and IRQ which gives your modem an address within your computer.

Setting up COM Port and IRQ Selections

To set the COM Port and IRQs on your HC modem, use the information provided below to install the six Berg Jumpers and configure your modem. Both COM Port and IRQ selection must be done before you install your modem.

Industry Standards for COM Port and IRQ Settings:

COM Port	IRQ
1	4
2	3
3	4
4	3

Choosing the Best Settings for Your Computer

If your computer has one or two serial ports built in as COM1 and/or COM2, the modem must be assigned to a different COM Port. If you must use COM1 or COM2, disable the selected port on your serial I/O card.

Windows 95 is designed to set the COM port for all new Plug-n-Play hardware automatically. However, this may not be the best selection for your computer. Windows 95 can set up to eight COM ports, but most software only recognizes four. To change the COM port set up by Windows 95, refer to "Using Windows 95 Installation", later in this chapter.

In IBM AT and compatibles, COM Ports 1 through 4 share two system interrupts, IRQs, to prevent having more than two serial devices active at one time. COM Ports 1 and 3 use IRQ4, and COM Ports 2 and 4 use IRQ3. Since your modem offers configurable IRQs, you can specify the configuration to use by assigning the modem to IRQ 2, 3, 4, or 5. If a serial device is active on COM1, and the modem is on COM3, then there may be an interrupt conflict, unless you configure the modem for another IRQ other than 3. Without configurable IRQs, you are limited to only two serial devices active simultaneously on COM Ports 1 through 4.

Installing Berg Jumpers

A Berg jumper is a small plastic and metal component used to cover the pins of the Berg header used in some Half-Card models. To locate the Berg jumpers included with your unit, look for the Berg headers, in the left, lower corner of the modem card. When the jumper covers both pins of a header, a COM Port or IRQ selection has been made. If a jumper only covers one pin, the header is neutral.

To install a Berg jumper, place the jumper over the two pins of a header. The location of the jumpers must be changed according to the guidelines below to specify your COM Port and IRQ selections. After setting your COM Ports and IRQs, store remaining unused jumpers by covering the outside pin of an unoccupied header, placing it in neutral.

Setting the COM Ports

To set the COM ports for your modem, please refer to *Chapter 2*.

HC Quick Installation Guide

To install an HC modem:

1. Switch off your computer and unplug the AC power cord from the wall socket. Follow the instructions in your computer's operating manual.
2. If you do not have a Plug-n-Play model, set the COM Port and IRQ jumpers on the modem according to the illustrations located on the label on your modem.
3. Remove the cover shield from an empty expansion slot, saving the screw.
4. With the mounting bracket facing the rear of the computer, insert the edge connector at the bottom of the modem card into the slot. Press down firmly.
5. Secure the bracket to the rear panel with the screw saved earlier.

6. Replace the computer's outer case and plug in any cables disconnected for installation.
7. Plug one end of the RJ-11 connector into the modem jack marked "line." Plug the other end into your telephone service outlet. You can use the other modem jack, marked "phone," for a standard telephone connection.

Note: To make sure your modem is functioning properly, follow the testing procedures in Chapter 2 of this manual.

HC Configuration Options

Following are the standard software configuration options for your HC modem used with most communications packages:

Model	bits/s	Flow Control	Terminal Emulation	Initialization String
ProClass 144	115,200*	RTS/CTS or Hardware	ANSI	AT&F1
ProClass 288	230,400*	RTS/CTS or Hardware	ANSI	AT&F1
Practical 144	57,600*	RTS/CTS or Hardware	ANSI	AT&F1
Practical 288	115,200*	RTS/CTS or Hardware	ANSI	AT&F1

**Note: See the technical specifications for your model for more information on bits/s or software compatibility.*

HC Modem System Requirements: IBM PC or compatible.
(Quick Link software requires 640K RAM and hard drive).

External Modems

The Practical Peripherals external modems include LCD modem with a three line display panel, and MiniTower modems. Both external types have IBM compatible and Macintosh models.

LCD External Modems

In addition to communications enhancements, your new modem has a three-line LCD display and ten front-panel indicator lights to provide visual feedback on the modem's mode and connection status. With just a glance, you can check the current time, connection status, transfer rate in characters per second, and time spent online.

All LCD modems come with a communications software package and User's Guide.

New LCD Commands

%HOUR=n Change Time Format

This command configures the modem clock to use either 12-hour (standard) or 24-hour (military) time format, without using the front-panel switches. The variable *n* can have one of two values: 12 or 24. Type the command and new settings in the format:

For standard, **AT%HOUR=12**

For military, **AT%HOUR=24**

The LCD modem clock defaults to 12-hour format after losing power. Turning power off will not affect the time or the hour setting.

%TIME Change Time

This command configures the modem clock without using the front-panel switches. The command syntax is strict. Type the command and the new time (in 24-hour format) in the following format:

AT%TIME=HHMMSS

HHMMSS time parameters represent the current hour, minute, and second. The values must comply to two conditions:

1. The time parameters must be in 24-hour format.

Note: To calculate 24-hour format, add 12 to hours after 12 o'clock noon.

2. The time parameters must consist of exactly six digits.

LCD Quick Installation Guide

1. Hold the modem face-down in one hand. Hook two fingers of your other hand under the base and pull gently.
2. Insert one end of the telephone cable into the RJ-11 jack of your telephone service outlet. Insert the other end of the cable into one of the modem's RJ-11 jacks. You can use the other RJ-11 jack for a standard telephone line.
3. Fit the small power cord plug into the modem and plug the power cube into a 120V AC wall outlet.
4. Connect the male end of your serial cable to the female connector in the rear panel of the modem. Insert the female end of the RS-232 Serial cable into the serial port connector, or insert the round end if using a Macintosh, on your computer or terminal.
5. Check to make sure the positioning stand is properly placed in the base unit. Gather the cables together into the opening in the base of the unit. Fit the base guides under the back of the modem and slide it firmly into the face plate. (When properly installed, the edges of the base unit are under the faceplate.)

Note: The small stand in the base of the modem has two positions, retracted and extended. To sit the modem at a slight angle, place the modem on a flat surface and apply firm pressure to the top. To stand the modem vertically, pull the stand into the extended position.

LCD Configuration Options

Following are the standard software configuration options for your LCD modem used with most communications packages:

Type of Computer	Modem Speed	bits/s	Flow Control	Terminal Emulation	Initialization String
Macintosh	144	115,200*	Hardware	ANSI	AT&F3
	288	115,200*			
PC	144	115,200*	RTS/CTS or Hardware	ANSI	AT&FI
	288	230,400*			

**Note: See the technical specifications in the Online User's Reference for your model for more information on bits/s and software compatibility.*

Quick Installation and Unique Product Configuration

LCD Modem System Requirements: IBM PC or compatible and shielded RS-232 serial cable. Macintosh systems require a shielded hardware handshake cable that is furnished with this modem.

MiniTower External Modems

MiniTower External Modems can stand vertically to maximize desktop space and come with a communications software package and User's Guide.

MiniTower Quick Installation Guide

1. Connect the male end of your serial cable to the female connector in the rear panel of the modem. Insert the female end of the cable into a serial port connector on your computer, or insert the round end of the handshake cable into the back of your Macintosh.
2. Fit the small power cord plug into the modem, to the left of the serial cable. Plug the power supply into a standard 120V AC wall socket.
3. Insert one end of the cable into the modem's RJ-11 jack marked "Line". Insert the other end of the telephone cable into the RJ-11 jack of your telephone service outlet. You can use the other RJ-11 jack, marked "phone" for a standard telephone line.
4. To stand the modem vertically, place the stands along the edge between the phone jacks and the Practical Peripherals logo. The power switch should be easily accessible.

MiniTower Configuration Options

Following are the standard software configuration options for your MiniTower modem used with most communications packages:

Type of Computer	Modem Speed	bits/s	Flow Control	Terminal Emulation	Initialization String
Macintosh	144	115,200*	Hardware	ANSI	AT&F3
	288	115,200*			
PC	144	115,200*	RTS/CTS or Hardware	ANSI	AT&F1
	288	230,400*			

**Note: See the technical specifications for your model for more information on bits/s and software compatibility.*

MiniTower Modem System Requirements: IBM PC or compatible and shielded RS-232 serial cable. Macintosh systems require a shielded hardware handshake cable that is supplied with your new Practical Peripherals modem.

Using Windows 95 Installation

Windows 95 recognizes new hardware differently than Windows 3.1 or 3.11. When installing your new modem, follow the directions below, and refer to your *Windows 95 User's Guide*.

1. Turn off your computer and install the modem as described previously in this manual.
2. Turn on your system and start Windows 95 by clicking on the Start icon. Select Settings and choose Control Panel.
3. Double-click on the Install New Hardware icon. The Add New Hardware Wizard opens. Follow the window instructions, and press Next. Select the No indicator box to select your own hardware. Press Next to select the type of hardware you are installing.
4. Select Modem and press Next. Windows 95 will ask you if it should detect the modem. Select the indicator box to pick your modem from a list.
5. Insert the diskette that contains the .INF file for your modem. Press Have Disk....
6. Verify the disk drive and press OK. Select your modem from the list and press Next.

Quick Installation and Unique Product Configuration

7. Select an unused COM port to install your modem on and press **Next**. Windows 95 has completed installation. Press **Finish**.

Using Windows 95 with Plug-n-Play Models

With Plug-n-Play models, Windows 95 connects your modem automatically to an established COM port. This eliminates the need for you to set COM ports. However, because Windows 95 recognizes eight COM ports and most software only recognizes four, you may want to change the Windows 95 automatic selection.

Note: You must still adjust theberg jumpers on the HC (half-card) modems that are not Plug-n-Play models, according to the instructions earlier in this manual.

1. Turn off your computer and install the modem as described previously in this manual.
2. When you turn on your system and start Windows 95, the **New Hardware Found** window displays. To install your new hardware, select from a list of alternative drivers by clicking on the **Alternative Driver** indicator box. The **Select Hardware Type** window displays.
3. Select **Modem** and press **OK**. The **Install New Modem** window displays with scrolling sections for modem manufacturer and model.
4. For modem manufacturer, select **Practical Peripherals**. For model, select your modem name. Press **OK**.

Note: Make sure you select the same modem speed and type that appears on the modem packaging.

Although Windows 95 has automatically selected the COM port, this may not be one of the four recognized by most software. To change the COM port see the following section.

Changing the COM Port for Windows 95 Plug-n-Play Modems

Because Windows 95 recognizes eight COM ports and most software only recognizes four, you may need to change the COM port for Plug-n-Play modems in order to use your communications software.

1. To change the COM port, start Windows 95 by clicking on the **Start** icon. Select **Settings** and choose **Control Panel**.
2. Double-click on the **System** icon and select the **Modem** tab. Highlight the modem you want to reconfigure and press **Properties**. All the properties of the selected modem display.
3. Select the **Resources** tab. The input/output range and setting display for the modem. Highlight the **Input/Output range**.
4. To change the settings, click off the **Use Automatic Settings** indicator box, then press **Change Settings...**. The **Edit Input/Output Range** window displays.
5. Select one of the following values that correspond to the first four COM ports:

<u>Base I/O</u>	<u>COM Port</u>
03F8	COM1
02F8	COM2
03E8	COM3
02E8	COM4

Note: In the lower portion of the window, a message will display if there is a conflicting device already using the selected COM port.

6. Press **OK** to accept the value, then press **OK** to close the window. A warning window displays to verify you want to create a forced configuration. Press **Yes**.

Installing a Plug-n-Play Modem without Windows 95

Plug-n-Play models are designed to be configured by Windows 95. If you purchased a Plug-n-Play modem, and are not running Windows 95, you must configure the modem with the **SETCOMM.EXE** program included in your modem package.

1. Turn off your computer and install the modem as described previously in this manual.
2. When you turn on your system, start at the DOS prompt, and get the A prompt (or B if you are using the B drive). Type **SETCOMM.EXE**.
3. Follow the screen instructions to configure your modem for COM port 1-4.

For a complete list of features supported by your modem, refer to the modem model name in the feature matrix on the next few pages.

Product Feature Matrix

Features	PC144T2/EZ	PC288T2/EZ	MC144T2-EZ	MC288T2-EZ
Internal	●	●	●	●
External				
Plug-n-Play	●	●	●	●
Windows 95 compatible	●	●	●	●
V.34 28,800 bits/s		●		●
V.32, V.32 <i>bis</i>	●	●	●	●
V.42 <i>bis</i> , MNP 5 data compression	●	●	●	●
V.42, MNP 2-4 error control	●	●	●	●
V.22 <i>bis</i> , V.22, Bell 212A, Bell 103	●	●	●	●
Class 1 Fax	●	●	●	●
Class 2 Fax	●	●	●	●
V.17 Fax 14,400-7200	●	●	●	●
V.29, V.27ter Fax 9600-2400	●	●	●	●
230,400 bits/s DTE		●		
115,200 bits/s DTE	●		●	●
57,600 bits/s DTE	●	●	●	●
Asynchronous	●	●	●	●
Distinctive Ring	●	●	●	●
Fax-on-demand				
Caller ID				
Communications software	●	●	●	●
AT\$H ROM Help Screens	●	●	●	●
Calling Card Bong detection	●	●	●	●
Flash memory	●	●	●	●
Hardware volume control				

Quick Installation and Unique Product Configuration

Product Feature Matrix

Features	PCI44HC	PC288HC V.34	PMI44HC II	PM288HC II V.34
Internal	●	●	●	●
External	●	●	●	●
Plug-n-Play				
Windows 95 compatible	●	●	●	●
V.34 28,800 bits/s		●		●
V.32, V.32bis	●	●	●	●
V.42bis, MNP 5 data compression	●	●	●	●
V.42, MNP 2-4 error control	●	●	●	●
V.22bis, V.22, Bell 212A, Bell 103	●	●	●	●
Class 1 Fax	●	●	●	●
Class 2 Fax	●	●	●	●
V.17 Fax 14,400-7200	●	●	●	●
V.29, V.27ter Fax 9600-2400	●	●	●	●
230,400 bits/s DTE		●		
115,200 bits/s DTE	●	●		●
57,600 bits/s DTE	●	●	●	●
Asynchronous	●	●	●	●
Distinctive Ring	●	●	●	●
Fax-on-demand				
Caller ID	●	●		
Communications software	●	●	●	●
AT&T ROM Help Screens	●	●		
Calling Card Bong detection	●	●		
Flash memory				
Hardware volume control				

Product Feature Matrix

Features	PC288LCD V.34	MC288LCD V.34	PC288MT V.34	PC 144MT
Internal	●	●	●	●
External	●	●	●	●
Plug-n-Play				
Windows 95 compatible	●	●	●	●
V.34 28,800 bits/s	●	●	●	●
V.32, V.32 bis	●	●	●	●
V.42 bis, MNP 5 data compression	●	●	●	●
V.42, MNP 2-4 error control	●	●	●	●
V.22 bis, V.22, Bell 212A, Bell 103	●	●	●	●
Class 1 Fax	●	●	●	●
Class 2 Fax	●	●	●	●
V.17 Fax 14,400-7200	●	●	●	●
V.29, V.27ter Fax 9600-2400	●	●	●	●
230,400 bits/s DTE	●	●	●	●
115,200 bits/s DTE	●	●	●	●
Asynchronous	●	●	●	●
Distinctive Ring	●	●	●	●
Fax-on-demand				
Caller ID	●	●	●	●
Communications software	●	●	●	●
3-line LCD	●	●		
AT\$H ROM Help Screens	●	●	●	●
Calling Card Bong detection	●	●	●	●
Hardware volume control	●	●		
Leased-line	●	●	●	●

Quick Installation and Unique Product Configuration

Product Feature Matrix

Features	PM144MT II	PM288MT II V.34	MC144MT II	MC288MT II V.34
Internal				
External	●	●	●	●
Plug-n-Play				
Windows 95 compatible	●	●	●	●
V.34 28,800 bits/s		●		●
V.32, V.32 <i>bis</i>	●	●	●	●
V.42 <i>bis</i> , MNP 5 data compression	●	●	●	●
V.42, MNP 2-4 error control	●	●	●	●
V.22 <i>bis</i> , V.22, Bell 212A, Bell 103	●	●	●	●
Class 1 Fax	●	●	●	●
Class 2 Fax	●	●	●	●
V.17 Fax 14,400-7200	●	●	●	●
V.29, V.27 <i>ter</i> Fax 9600-2400	●	●	●	●
115,200 bits/s DTE		●		●
57,600 bits/s DTE	●	●	●	●
Asynchronous	●	●	●	●
Distinctive Ring	●	●	●	●
Communications software	●	●	●	●
AT\$H ROM Help Screens				
Calling Card Bong detection				
Hardware volume control				
Leased-line				

Appendix A

FCC and Industry Canada Certifications

Both the U.S. Federal Communications Commission (FCC) and Industry Canada require certain notifications to the user of any digital device which can radiate radio frequency energy. There are additional governmental requirements for devices which connect to the public telephone network. This chapter contains the notices required by the FCC and Industry Canada pertaining to your Practical Peripherals modem.

General Rules for FCC Compliance

In compliance with the Federal Communications Commission (FCC), the following FCC Part 68 and Part 15 regulations are provided regarding the installation and operation of your modem. FCC regulations Part 68 places these restrictions on using the modem.

- You must *not* connect your modem to a party line or a coin-operated telephone.
- If abnormal circumstances create a problem on the telephone line, the modem should be disconnected from the telephone line until it can be determined if the trouble source is the modem or some other piece of equipment.
- All necessary repairs to the modem must be made by Practical Peripherals Other repair methods can alter the modem's RFI emissions and other pertinent characteristics sufficiently to void your authority to operate the modem.

Modem Installation Manual

- If requested, you must make the information contained in the following box available to the telephone company.

Repair Center	Practical Peripherals P.O. Box 921789 Norcross, GA 30092 - 7789
Model:	See Certification Label on Modem*
FCC Registration Number:	See Certification Label on Modem*
Ringer Equivalency Number (REN):	See Certification Label on Modem*

*The FCC and Industry Canada certification labels are placed on the bottom of the modem. These labels display the appropriate certification numbers and other required information.

FCC rules Part 15

The Practical Peripherals modem is covered by FCC rules for a Class B computing device. As required by FCC regulations, the following is provided for the information and guidance of the user.

Warning:

1. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it can cause harmful interference to radio communications. Determine if the equipment does cause interference to radio or television reception, by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:
 2. Where it can be done safely, reorient or relocate the receiving antenna.
 3. Increase the separation between the equipment and receiver.
 4. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 5. Consult the dealer or an experienced radio/TV technician for help.
 6. Use a shielded and properly grounded I/O cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with FCC Rules, Part 15. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference that may be received, including interference that may cause undesired operation.

If the measures described above do not correct the interference problem, call Practical Peripherals Customer Service. Also, the booklet, "How to Identify and Resolve Radio-TV Interference Problems," is available from the U.S. Government Printing Office, Washington, D.C. 20402. Order Stock #004-000-0034504.

Practical Peripherals is required to make any repairs to the modem necessary to maintain its valid FCC registration. It is the responsibility

FCC and Industry Canada Certifications

of the user requiring service and/or repair to call Practical Peripherals Customer Service at (770)840-9966 for more information.

WARNING FOR STANDALONE MODEMS: A shielded cable must be used on any serial port connection to prevent interference to radio and TV reception.

Changes or modifications not expressly approved by Practical Peripherals could void the user's authority to operate equipment.

FCC rules Part 68

This device has been granted a registration number by the Federal Communications Commission under Part 68 Rules and Regulations, for direct connection to the telephone lines. In order to comply with these FCC rules, the following instructions must be carefully read, and applicable portions followed completely.

NOTE: This equipment complies with Part 68 of FCC Rules. On the bottom of the modem case is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which can be connected to the telephone line. Excessive RENs on a telephone line can result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that can be connected to the line as determined by the total RENs, contact the telephone company to determine the maximum RENs for your calling area.

This equipment uses the USOC RJ-11C jack.

If the telephone company suspects that a problem with your telephone line is related to an add-on electronic device, such as the modem, they have the right to temporarily suspend your service. It is your responsibility to remove any malfunctioning electronic communications equipment from the telephone line to avoid damage to the telephone system.

The telephone company should promptly inform you of their actions. They should also inform you of your right to file an FCC complaint if you feel the service suspension is unwarranted. Most often, you will receive notification before service is disrupted.

The telephone company can make changes in its facilities, equipment, operations, or procedures that could affect compatibility and operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

To maintain continued compliance with the FCC Rules, any repairs or modifications to this equipment must be made by the manufacturer. If a problem develops, contact Practical Peripherals at the address in this manual.

This equipment cannot be used on public coin service provided by the telephone company. Connection to Party Line Service is subject to state tariffs. Contact your state Public Utility Commission, Public Service Commission, or Corporation Commission for more information.

WARNING

Per FCC Part 68, Section 68.318(c)(3), it is ILLEGAL to transmit a FAX message in the United States which does not contain the following sender information:

"... in a margin on the top or bottom of each transmitted page or on the first page of the transmission, the date, time sent, and an identification of the business, other entity or individual sending the message and the telephone number of the sending machine of such business, other entity, or individual."

Note: See the cover page section of your fax software manual for set up details.

Industry Canada Certification

Industry Canada requires the following information be provided in this manual:

Notice:

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Industrie du Canada.

Notice:

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. This equipment must also be installed using an acceptable method of connection. In some cases the company's inside wiring associated with a single line individual service can be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with these conditions can not prevent degradation of service in some situations.

FCC and Industry Canada Certifications

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or any equipment malfunctions, can give the telecommunications company cause to disconnect the equipment.

For their own protection users should ensure that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution can be particularly important in rural areas.

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Load Numbers

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop used by the device. The termination of a loop can consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100. This requirement is to prevent overloading of the telephone loop.

The modem uses the CA11A connecting arrangement.

Modem Manufacturer	Practical Peripherals P.O. Box 821789 Norcross, GA 30092-7789
Model:	See Unit Label on Modem
DOC Registration Number:	See Certification Label on Modem
Ringer Equivalency Number (REN):	See Unit Label on Modem

C.S.A. Regulatory Information

Please read the following information concerning your internal Practical Peripherals modem product and the regulatory requirements of the C.S.A. (Canadian Standards Association.)

CAUTION: Internal modem cards are intended to be installed in a CSA-certified equipment in the field by the user in a Manufacturer's-defined operator access area. Check the equipment operating/installation instructions and/or equipment to verify/confirm if your equipment is suitable for the user-installed application cards.

CAUTION: Always disconnect the modem board (the one with the telephone plug/jack) from the telephone system adjacent to the modem card.

CAUTION: Apply the enclosed adhesive warning label to the outside or inside of the computer equipment enclosure adjacent to the modem card.

Modem Installation Manual

ATTENTION: Cette carte modem est destinee a etre installee par l'utilisateur, sur et a l'interieur de la zone definie par la fabricant, dans un appareil certifie CSA. Consulter le mode d'emploi ou le fabricant de l'appareil pour verifier ou confirmer si l'utilisateur peut y installer lui-meme des cartes peripheriques.

ATTENTION: Toujours debrancher la ligne telephonique de la carte modem (munie d'une prise ou d'une fiche) avant de proceder a l'installation dans l'appareil ou lorsque le couvercle de celui-ci est retire.

ATTENTION: Apposer l'étiquette autocollante de mise en garde ci-incluse sur la paroi exteriere ou interieure du boitier do l'appareil pres de la carte modem.

UL Regulatory (Internal Modems ONLY)

The internal modems are for use with an IBM AT or compatible UL Listed personal computers that have Installation Instructions detailing use installation of card cage accessories.

Appendix B Warranty Information

Information contained in this chapter provides details of the limited warranty that protects your modem and explains how our technical support system works and who to contact for assistance, if required.

Limited Warranty/Guarantee and Service Policy

Who is covered

This limited warranty/guarantee ("Warranty/Guarantee") is given by Practical Peripherals ("Practical") only to the original purchaser of the accompanying hardware and/or software product ("Product"), who purchased the Product from an authorized Practical reseller. This Warranty/Guarantee is not assignable to any other person.

What is covered

This Warranty/Guarantee covers defects in materials and/or workmanship under normal use and service ("Defects"). This Warranty/Guarantee also covers any failure of the Product to perform substantially in accordance with the description in the documentation accompanying the Product ("Performance") only when used in the United States and Canada, or other countries having telecommunication standards substantially equivalent to those of the United States or Canada. This Warranty/Guarantee is in lieu of all other express warranties or guarantees which might otherwise arise with respect to the Product. No one is authorized to change or add to this Warranty/Guarantee.

What is not covered

Practical does not warrant or guarantee you uninterrupted service, the correction of any error, or the elimination of any "bug". THIS WARRANTY/GUARANTEE APPLIES TO THE PRODUCT ONLY AND DOES NOT COVER ANY OTHER SOFTWARE OR HARDWARE WHICH MAY BE INCLUDED WITH YOUR PURCHASE OF THE PRODUCT WITHOUT LIMITING THE

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GENERALITY OF THE FOREGOING, ANY SUCH SOFTWARE OR HARDWARE IS PROVIDED "AS IS" AND WITHOUT WARRANTY/GUARANTEE OR CONDITION OF ANY KIND. You are solely responsible for any failure of the Product which results from accident, abuse or misapplication or alteration of the Product. Practical assumes no liability for any events arising out of the use of any technical information accompanying the Product.

INCIDENTAL AND CONSEQUENTIAL DAMAGES CAUSED BY MALFUNCTION, DEFAULT, ACTS OF NATURE, OR OTHERWISE WITH RESPECT TO BREACH OF THIS WARRANTY/GUARANTEE OR ANY OTHER EXPRESS OR IMPLIED WARRANTIES/GUARANTEES OR CONDITIONS, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE NOT THE RESPONSIBILITY OF PRACTICAL AND ARE HEREBY EXCLUDED BOTH FOR PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, FOR PERSONAL INJURY DAMAGE.

Within the United States, some states do not allow the exclusion or limitation of incidental and consequential damages, so the above exclusion may not apply to you. This Warranty/Guarantee gives you specific legal rights. You may also have other rights which vary from state to state.

Period of coverage for PCMCIA modems ONLY:

Within the United States, Canada and Mexico

A five-year limited Warranty/Guarantee applies to accompanying Products sold for use in the United States, Canada and Mexico. This coverage is only applicable to the original owner/purchaser of the Product.

Period of coverage for all modems EXCEPT PCMCIA:

The coverage lasts for as long as the original purchaser owns the Product.

Servicing your Product

Under the Warranty/Guarantee

In the event of a malfunction attributable to Defects or Performance, Practical will, at its option, (1) repair the Product to the extent Practical deems necessary to restore the Product to proper operating

condition, or (2) replace the product with a new or functionally equivalent product of equal value. The remedy described above is the exclusive remedy extended to you by Practical for any default, malfunction, or failure of the Product to conform with this Warranty/Guarantee or otherwise for the breach of this Warranty/Guarantee or any other warranty, guarantee or condition, whether expressed or implied.

Within the United States

Should you experience any difficulty with your Practical product, please contact our Technical Support department. Before you call, gather your notes about your specific problem and what you have done in your attempt to find a solution. Have your system up and running when you call. The technician will discuss your problem with you and guide you through some troubleshooting procedures. If it is determined that your problem cannot be solved on the telephone and the product must be returned to the factory for repair, our technician will issue you an Return Materials Authorization (RMA) number. This number must be clearly display on the parcel so that we may identify the unit and its owner.

Note: If you send a product in for repair and fail to obtain an RMA number or do not place the issued RMA number on the outside of the package, you may experience a lengthy delay before your unit is repaired and returned.

RMA returns are subject to a nominal fee to cover handling and return shipment costs. There are no other charges made for any repair covered by the terms of this warranty.

Please remember to include your name, address, daytime telephone number, and a copy of your dated receipt or invoice inside the package. Since Practical cannot be responsible for loss or damage of a returned item during shipment, be certain that your product is adequately packaged and insured.

Outside the United States

Should you experience any difficulty with your Practical product, please contact authorized Practical reseller from whom you purchased this product. Request instructions and authorization for a claim of service under this Warranty/Guarantee. You will be asked to provide a copy of your proof of purchase receipt or invoice. For all other service needs, contact your reseller for instructions.

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Outside of the Warranty/Guarantee Period

Practical offers service, for a fee, to repair product failures which are not covered by the accompanying Warranty/Guarantee. Examples of failures which are not covered include, but are not limited to, lightning strikes and other acts of nature, accident, abuse of the product, misapplication of the product, or unauthorized alteration of the product. This service for a fee also

Within the United States

Should you require service, please contact our Technical Support department. If it is determined that your problem cannot be solved on the telephone and the product must be returned to the factory for repair, our technician will issue you a Return Materials Authorization (RMA) number. This number must be clearly displayed on the parcel so that we may identify the unit and its owner.

You will be quoted an estimated repair fee at the time you request a RMA number. The actual repair fee will depend upon the nature of the repair. Under all circumstances, a minimum fee will be charged to cover the costs of test and diagnosis of the problem plus handling and return shipment. This minimum fee will be charged even if no defect is found. Repair fees may change from time to time without notice. Please remember to include your name, address and daytime telephone number inside the package. Since Practical cannot be responsible for loss or damage of a returned item during shipment, be certain that your product is adequately packaged and insured.

Outside the United States

Should you require service, please contact an authorized Practical reseller.

Modifying Your Product

Practical does not authorize you to modify or make any special applications for this Product. Modifications not made by Practical could void your warranty.

Technical Support

Practical Peripherals provides several avenues for technical support of their product line. The company maintains both the Practical BBS as well as a support forum on CompuServe in addition to standard

telephone technical support. This support is located at Practical's headquarters in the United States.

Telephone support hours

Technicians are available from 8:00 a.m. to 6:00 p.m. EST, Monday through Friday, and 9:00 a.m. to 6:00 p.m. EST, Saturday and Sunday.

These support hours are subject to change without notice.

The telephone support number is: (770) 840-9966

On-line Services

Practical FORUM on CompuServe

The Practical Peripherals product support forum on CompuServe can be accessed from any CompuServe ! prompt by typing:

GO Practical FORUM

There is no cost for this support service other than the normal CompuServe on-line time charges. The service is available 7 days each week, 24 hours each day. Questions posted in the forum usually have a response within 24 hours. Often a reply is entered within hours.

Forum members can exchange information with each other directly, ask technical support questions of the forum SysOp, or offer application tips and hints to other users in the various message areas. The libraries in Practical FORUM contain both telecommunications files as well as utility and text files of general interest to microcomputer users.

If you do not already have a membership to CompuServe, you may use the enclosed complimentary booklet to join.

Practical BBS

Practical Peripherals maintains a technical support bulletin board which you may call to leave detailed messages about your product. Your questions will usually be answered within 24 hours.

The Practical BBS supports 1200, 2400, 9600, 14400 and 28800 bps connections. The parameters are: 8 data bits, 1 stop bit, and NO parity (8-1-N), with ANSI emulation. The BBS operates 24 hours each day, seven days each week. The telephone number is:

(770) 734-4600

All Practical Peripherals customers are welcome to call and use the Practical BBS.

Note: Neither the Practical BBS nor the forum on CompuServe can issue an RMA.

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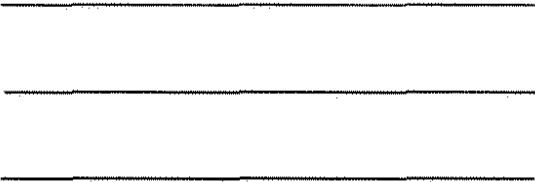
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P.O. Box 921789 Norcross, Georgia 30092-7789

Technical Support: 770-840-9966

Monday thru Friday 8am-6pm EST, Saturday thru Sunday 9am-6pm EST

From Compuserve: At any "!" prompt, type GO PPIFORUM

World Wide Web: <http://www.practinet.com>